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REVISION OF THE AUSTRALIAN VITACEAE, 5. *TETRASTIGMA* (MIQ.) PLANCHON

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Summary

Tetrastigma nitens **(F. Muell.) Planchon, previously the only known species of *Tetrastigma* recorded for Australia, is redescribed. Three new species *T. crenatum, T. petraeum* and *T. thorsborneorum* are described and illustrated. A description of *T. pisicarpum* is included as specimens from a vine growing in vine forest at the tip of Cape York possibly belong to this species. A description of the genus is also given, together with a key to the species.**

This paper completes the revision of the Australian species of the Vitaceae. The genera described are *Ampelocissus* Planchon (Jackes 1984), *Cayratia* Juss. (Jackes 1987), *Cissus* L. (Jackes 1988a) and the Western Australian endemic *Clematicissus* (F. Muell.) Planchon (Jackes 1989). A key to the genera in Australia has been given by Jackes (1988b).

TETRASTIGMA

Tetrastigma (Miq.) Planchon in A. & C. DC., Monogr. phan. 5: 423 (1887); *Vitis* sect. *Tetrastigma* Miq., Ann. mus. lugd.-bat. 1: 72 (1863). **Type:** *Vitis lanceolaria* Roxb. (= *Tetrastigma lanceolarium* (Roxb.) Planchon.)

Climbing evergreen vines, dioecious. Stems striate, initially rounded but often becoming flattened with age; underground root system extensive. Tendrils leaf-opposed, unbranched or branched, branches subtended by a bract. Leaves alternate, trifoliolate or pedately 5–11-foliolate, margins indented rarely entire; indentations usually small. Stipules 2, caducous. Inflorescence in Australian species axillary, shortly pedunculate, cymose with terminal multiflowered umbels; peduncles and pedicels subtended by bracts. Flowers unisexual, tetramerous. Calyx cup-shaped; margin entire or shallowly lobed. Corolla with 4 free lobes; lobes cohering in bud, cucullate at apex, usually reflexed after anthesis, soon caducous. Stamens inserted on the receptacle at base of disc opposite petals; filaments erect; anthers in male flowers ovate-triangular, dorsifixed, introrse, opening by longitudinal slits; anthers in female flowers on staminodia, much reduced. Pollen grains tricolporate. Disc obscure, adnate to and entirely surrounding the base of the ovary in female flowers, almost completely covering the much reduced non-functional ovary in male flowers. Fertile ovary 2-locular with 2 anatropous, basally attached ovules per locule, conical; style short or absent; stigma large, 4-lobed, often ciliolate. Berry fleshy, globose to elliptical, with 1–4 ovoid to globose seeds. Shape of seeds in median transverse section varies according to the number maturing in the fruit; perichalaza extends for two-thirds to almost the total length of the dorsal surface. Endotesta irregularly lignified, endosperm ruminate, appearing convoluted in median transverse section. Mucilage cells and raphide sacs often containing mucilage appear to be present in all organs. Cotyledons lanceolate, three-veined at base, margins entire.

This genus is readily distinguished from the other genera of the Vitaceae by the dioecious flowers and the large 4-lobed stigma present in the pistillate flowers, and the capitate, entire stigma in the staminate flowers. In Australia, non-fertile specimens of *Tetrastigma* are usually readily recognised in the field by the firm, palmate or pedately compound, distinctly petiolate leaves which are glabrous or apparently glabrous but minutely puberulent when examined under magnification.

There appears to be little intraspecific variation with respect to leaf characters. This is unusual when compared to the other genera of Vitaceae occurring in Australia. Main characters used for distinguishing between the species are leaflet number, size of leaflets, and presence or absence of hairs. All measurements and observations in this paper refer to dried mature organs except where otherwise indicated.

Tetrastigma occurs chiefly in the Asian tropics and subtropics. It extends from India north to China, south to Australia and eastward to Fiji; more than half the 120 species which have been described occur in Malesia. Eighteen have been described from Papua New Guinea but many of these are inadequately known. Australian species fall into three groups: *T. nitens* (F. Muell.) Planchon and *T. petraeum sp. nov.*, which form a closely related pair with different habitat preferences, the former being found chiefly in or adjacent to rainforest, whilst the latter occurs in drier habitats; *T. crenatum sp. nov.*, which is closely related to the Papua New Guinean species *T. lauterbachianum* Gilg.; and *T. thorsborneorum sp. nov.*, which is closely related to *T. pisicarpum* (Miq.) Planchon, which occurs in southern Papua New Guinea. Vegetative material and specimens with immature staminate inflorescences collected in the Lockerbie scrub area at the tip of Cape York possibly belong to this species; however its status cannot be resolved until mature flowering and fruiting material is collected.

Terms used to describe rainforest habitats are those of Webb (1978).

Key to Species

1. Leaves 3-foliolate 2
   Leaves pedate 4

2. Leaves pubescent chiefly on lower surface of the midrib; margins crenate-serrulate, peg-like lenticels present on older stems . . . . **1. T. crenatum**
   Leaves glabrous, margins entire to irregularly serrate, lenticels not peg-like . . 3

3. Central leaflet more than 9 cm long, length/breadth ratio 2.08 ± 0.49 . . . . **2. T. nitens**
   Central leaflet rarely exceeding 8 cm long, length/breadth ratio 1.45 ± 0.35 . . . . **3. T. petraeum**

4. Seed with 2 lateral furrows which converge with central furrow on ventral surface at base; staminate inflorescence 3–5 cm long; leaflets usually 5–7 . . . . **4. T. thorsborneorum**
   Seed with 2 lateral furrows which converge with central furrow on ventral surface towards centre of seed; staminate inflorescence usually more than 6 cm long; leaflets usually 7–11 . . . . **5. T. pisicarpum**

1. Tetrastigma crenatum B.R. Jackes **species nova** affinis speciebus novoguineensibus *T. lauterbachiano* Gilg et *T. papilloso* (Blume) Planchon autem differt foliis trifoliolatis marginibus crenato-serrulatis, pilis uniseriatis multicellularibus in costa infra et papillis parvis in lamina consociata praeditis, floribus in caulibus vetioribus portatis et lenticellis prominentibus in caulibus vetis ornatis. **Typus:** Queensland. COOK DISTRICT: Cardstone via Tully, 17°45′S, 145°37′E, 3 April 1984, *E.M. Jackes*, " rainforest vine. Flowers minute, greenish on old wood. Red loam". (holo: BRI; iso: CANB,K,L,NSW).

Slender vine climbing over rainforest trees; stems lenticellate striate, with uniseriate multicellular hairs present on young stems; lenticels rounded, pustular with margins forming hollow peg-like protuberances to 3 mm long on older stems. Tendrils bifid. Leaves trifoliolate; leaflets glabrous above, lower with sparse uniseriate multicellular hairs confined to midrib and base of main laterals; papillae associated chiefly with the upper midrib and veins on the lower surface; margins crenate-serrulate; central leaflet broadly lanceolate, apex acuminate, base shortly angustate, (13.2–)14.8(–18) cm × (6.8–)7.4(–8.5) cm; laterals lanceolate, slightly oblique at the base, (10.7–)11.9(–14) cm × (5.2–)5.9(–6.4) cm. Petiole often sparsely pubescent, 6–10 cm long; central petiolule striate with 2 shallow grooves on upper surface, 1.7–2.3 cm long, lateral petiolules similar, 0.6–1 cm long. Stipules triangular, borne at right angles to the stem, 4–5 mm × 3–4 mm; margins papillate. Inflorescence borne on older wood; bracts prominent, several often clustered; uniseriate hairs present on branches. Staminate inflorescence not seen. Pistillate inflorescence with congested terminal umbels 6–7 cm long; pedicels pubescent, c. 1 mm long; calyx c. 0.25 mm long, with 4 small pubescent lobes; corolla c. 1–1.25 mm long, greenish, pubescent, with lobes cucullate and extended to form a pouch near the apex, not strongly reflexed; ovary conical, c. 0.5 mm long; style short, stigmatic lobes narrow. Fruit not seen. **Fig. 1A–B; Fig. 2A–D.**

Representative specimens: Queensland. Cook District: Ryker's Track, Cape Tribulation, Oct 1982, *Jackes* (BRI,CBG,NSW); Mossman Gorge, Jul 1976, *Jackes* (BRI,CANB,QRS); Babinda, 17°20'S, 145°55'E, May 1978, *Jago* (QRS).

Specimens from 5 localities examined.

Distribution and habitat: This species (**Map 1**) has been found only between Cape Tribulation to the north and the Tully area to the south, in complex mesophyll vine forest between sea level and 200 m altitude.

Phenology: Flowers have been collected in April and May; male flowers and fruits have not yet been collected.

Notes and observations: This species is related to *T. lauterbachianum*, from which it may be distinguished by the smaller pistillate inflorescence and the leaves which do not have uniseriate hairs on the abaxial surface, only small papillae being associated with the midrib, and to *T. papillosum* which has glabrous leaves. I could not distinguish between specimens of *T. lauterbachianum* and *T. gilgianum*, and hence regard these as synonymous. Flowering is apparently irregular. It took five years of regular visits to two populations to obtain flowering material! Plants grown from cuttings took two years to flower in Townsville. Adventitious roots on the cuttings emerged through the lenticular protuberances.

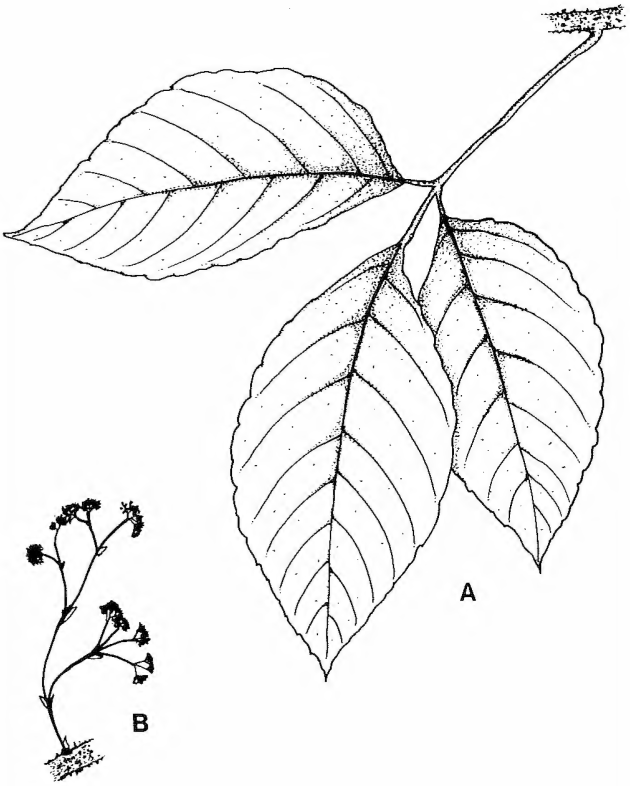

Fig. 1. *Tetrastigma crenatum*: A. leaf × 0.5. B. pistillate inflorescence borne on old wood × 1.

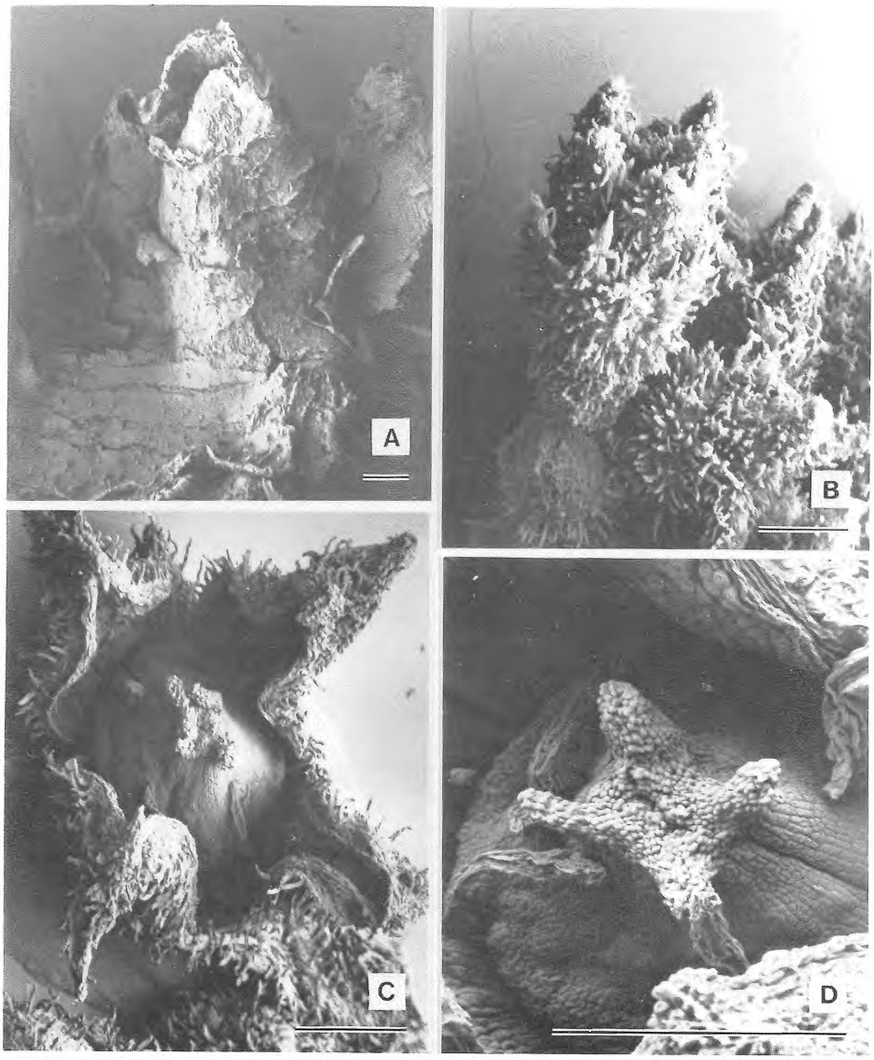

Fig. 2. *Tetrastigma crenatum*: A. portion of stem showing pustular lenticels. B. buds of female flowers. C. open female flower. D. ovary with expanded 4-lobed stigma and staminodes. All scale bars equal 0.5 mm.

Etymology: The specific epithet was chosen because this is the only Australian species with crenate-serrulate leaf margins.

2. Tetrastigma nitens (F. Muell.) Planchon in A. & C. DC., Monogr. phan. 5: 427 (1887); *Vitis nitens* F. Muell., Fragm. 2: 73 (1861), 6: 178 (1868). **Type:** Clarence River, *Beckler* (syn: K,MEL(MEL 540130),P); Hastings River, *Beckler* (syn: MEL(MEL 540142)); Macleay River, *Beckler* (syn: MEL(MEL 540143),P).

Robust vine; mature stems lenticellate, usually flattened, thickened at the nodes, glabrous; lenticels elongated, often with raised margins. Tendrils simple or bifid. Leaves trifoliolate; leaflets thinly coriaceous, glabrous; margins undulate or slightly revolute with 4–6 shallow teeth present on both sides of the lamina, often prominent on juvenile leaves, rarely entire; central leaflet broadly lanceolate, apex acuminate, base shortly angustate, (9–)11.9(–15) cm × (4.5–)6.3(–7) cm; lateral leaflets lanceolate, slightly oblique at base, (7.5–)9.3(–12.2) cm × (3.6–)4.8(–7) cm. Petiole shallowly grooved, often swollen at junction with stem, (1.5–)3.9(–5.8) cm long; central petiolule striate, shallowly grooved above, 1–3.2 cm long; lateral petiolules 0.2–1.8 cm long. Stipules triangular, c. 3 mm × 3 mm, glabrous. Inflorescence with prominent bracts, and sometimes small uniseriate papillae. Staminate inflorescence with 1–3 peduncles per axil, 4–6 cm long; pedicels 3–4 mm long; calyx spreading, c. 0.5 mm long; corolla c. 2 mm × 1 mm; filaments c. 1 mm long; anthers triangular-ovate, c. 0.5 mm long; ovary much reduced and almost covered by the disc. Pistillate inflorescence with 1 peduncle per axil rarely more, 2–3 cm long; pedicels 1–2 mm long; calyx spreading, c. 0.5 mm long; corolla creamy-green, c. 3 mm × 1.5 mm; lobes strongly reflexed after anthesis; staminodes present; ovary conical; stigma sessile, lobes ciliolate, spreading. Berry ovoid to ellipsoid, purplish-black to black at maturity, 1.2–1.5 mm × 1–1.3 mm; seeds ovoid, 1–1.1 cm × 0.6–0.9 cm; 1 or 2(–4) per fruit; endosperm in transverse section broken by the convoluted endotesta. **Fig. 3A–D.**

Representative specimens: Queensland. Cook District: 0.5 miles [c. 1 km] NW of Stuckies Gap, Bloomfield River area, 15°50′S, 143°19′E, May 1969, *Webb & Tracey* 8936 (BRI); Little Mulgrave Creek crossing near Gordonvale, May 1979, *Jackes* (A,BRI,CANB,CBG,JCT,K,L,MEL,NSW,QRS). North Kennedy District: Hervey's Range W of Townsville, 19°20′S, 146°29′E, Jan 1978, *Jackes* (L,PERTH). South Kennedy District: Dalrymple Heights and vicinity, Jun–Nov 1947, *Clemens* (BRI,K). Port Curtis District: Rockhampton, 1863–1865, *Dietrich* (BM,PR). Moreton District: Blackall Range, May 1977, *Byrnes* 3524 (BRI); Mt. Greville, Jun 1963, *Everist* 7253 (BRI,K). **New South Wales.** North Coast: Sandiland Ranges, Nov 1904, *Boorman* (NSW); Mt. Elaine, c. 12 miles [c. 20 km] SE of Grafton, Nov 1956, *Constable* (NSW); Manning River, 5 miles [c. 8.2 km]) NW of Burdook, Dec 1953, *Johnson* (K,NSW); Cabbage Tree Island, offshore island east of Port Stephens, Jan 1969, *Martensz* (CANB). Northern Tablelands: Platypus Ck., New England National Park, Dec 1960, *Williams* (NE). Central Coast: Martinvale, Nov 1965, Blaxell (NSW).

Specimens from 91 localities examined.

Distribution and habitat: This species (**Map 2**) is found in an area extending from south of Cooktown to around Sydney, chiefly in vine forest and along moist gullies. It occurs on a variety of soil types.

Phenology: Flowering occurs mainly in winter but flowers have been collected until midsummer. Fruits have been collected throughout the year.

Notes and observations: This widespread species shows affinities with *T. lanceolarium*, which occurs in Papua New Guinea, but may be distinguished from it by the broader leaves and larger fruits. It is closely related to *T. petraeum* which has smaller broader leaves and prefers drier inland habitats.

3. **Tetrastigma petraeum** B.R. Jackes **species nova** affinis *T. nitenti* (F. Muell.) Planchon a quo foliis brevioribus latioribusque et fructibus parvioribus distinguitur, et addite areas siccas [exempli gratia dumetum cum plantis volubilibus ('vine thicket') et silvam apertam] praeopta. **Typus:** Queensland. North Kennedy District: Walleroo Hill, 3 miles [c. 4.8 km] SW of Cashmere crossing, Herbert River, 18°08′S, 145°20′E, 30 March 1980, *E.M. Jackes*, "vine thicket on basaltic outcrop" (holo: BRI; iso: CANB,L,NSW).

A robust scrambling vine; stems striate to rounded, thickened at nodes, glabrous. Tendrils simple or shortly bifid. Leaves trifoliolate; leaflets coriaceous, glossy above but may be yellowish near marginal teeth; both surfaces glabrous; margins with 4–6 small mucronate teeth usually present, rarely entire; central leaflet broadly elliptical, apex acuminate to shortly caudate, base often truncate, (6–)6.5(–9) cm × (3.5–)4.5(–6.3) cm; lateral leaflets broadly elliptical, slightly oblique at base, (5.3–)5.6(–7.5) cm × (3.5–)4(–5.5) cm. Petiole striate, 1.8–4 cm long; central petiolule striate, 1.5–2 cm long; lateral petiolules 0.3–0.4 cm long. Stipules triangular, carried at right angles to the stem, revolute, c. 3 mm × 2.5 mm, glabrous. Inflorescence bracts inconspicuous. Staminate inflorescence not seen. Pistillate inflorescence 2–3 cm long, glabrous; pedicels c. 3 mm long; calyx truncate c. 0.5 mm long; corolla creamy-green, 2–3 mm × 1.5 mm; lobes strongly reflexed after anthesis; staminodes present, aborted anther reduced and awl-shaped; ovary conical, 1.5–2 mm long; stigma sessile, lobes ciliolate, spreading. Berry ovoid, black at maturity, 0.9–1.2 cm × 0.7–1 cm; seeds ovoid, 6–7 mm × 3.5 mm; usually 2 per fruit. Endosperm in transverse section much dissected by the convoluted endotesta. **Fig. 3E–H, Fig. 5A–B.**

Representative specimens: Queensland. Cook District: Granite Creek, Mareeba, 17°05'S, 145°21'E, Jul 1985, *Jackes* (A,BRI,CANB,K,L,MEL,NSW,QRS); Near Lancelot Mine, Silver Valley, Ravenshoe, Jul 1978, *Lockyer* (CBG). North Kennedy District: 3 km W of "Gregory Springs" Station, 19°40'S, 144°22'E, Oct 1984, *Jackes* (JCT,MEL); "Lochwall" Station, Charters Towers, Dec 1977, *Marsh* [AQ441436] (BRI).

Specimens from 7 localities examined.

Distribution and habitat: This species is found in open forest and vine thickets (**Map 2**) where it is often growing over rocks. Soils are variable.

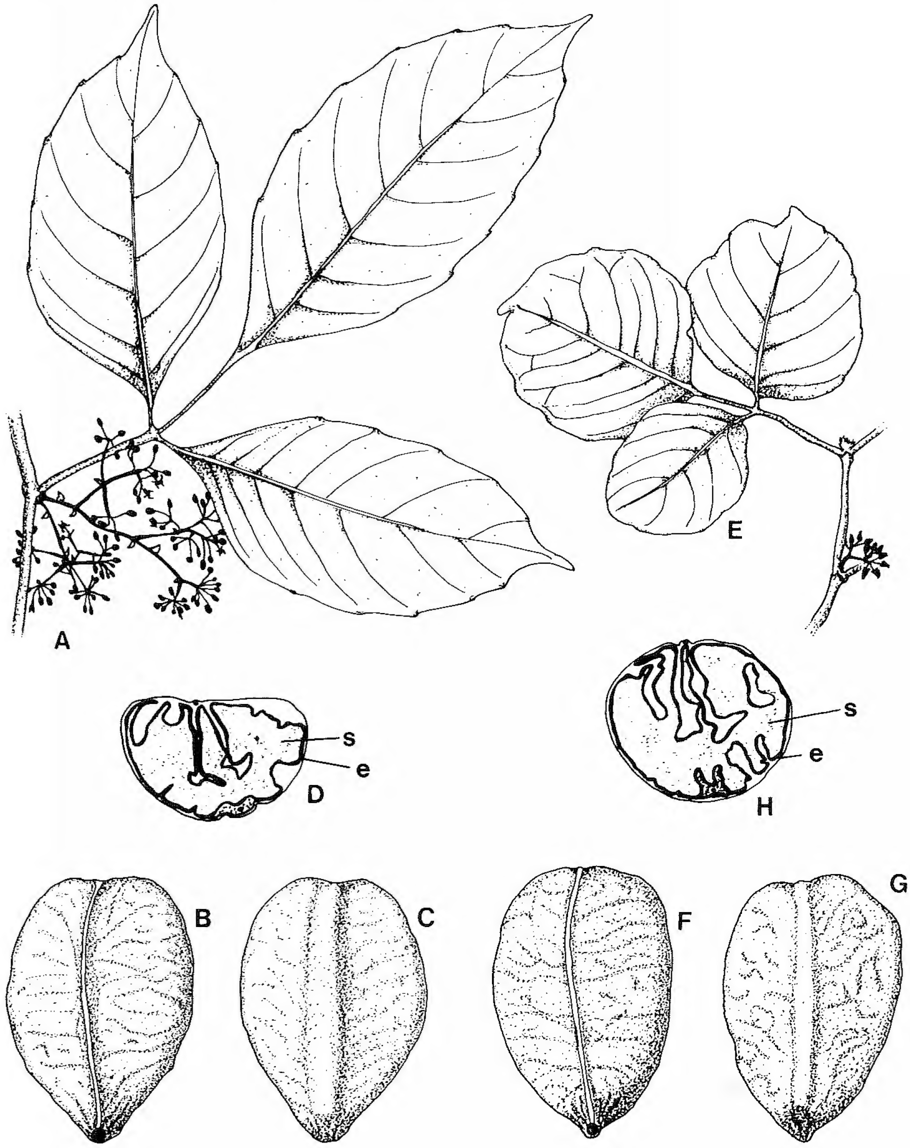

Fig. 3. *Tetrastigma nitens*: A. leaf with staminate inflorescence × 0.5. B. seed, ventral surface showing the position of the raphe × 5. C. seed, dorsal surface showing the position of the perichalaza × 5. D. median transverse section of mature seed × 5. *Tetrastigma petraeum*: E. leaf with pistillate inflorescence × 0.5. F. seed, ventral surface showing the position of the raphe × 5. G. seed, dorsal surface showing the position of the perichalaza × 5. H. median transverse section of mature seed. (e – lignified endotesta; s – endosperm.)

Phenology: Flowers have been collected in March and fruits throughout the year.

Notes and observations: This species is easily distinguished from the closely related *T. nitens* by the broadly elliptical almost ovoid leaves, which are also shorter than in that species, the smaller less pulpy berries and its habitat. Male flowers have not been seen.

Etymology: The specific epithet refers to the species' habit of growing over rocks exposed to the sun.

4. **Tetrastigma thorsborneorum** B.R. Jackes **species nova** affine *T. pisicarpo* (Miq.) Planchon a quo fructibus grandioribus globulo-ovoideis caesionigris ubi maturis, seminibus ovoideis, sulcis lateralibus duobus convergentibus in sulcum centralem a raphe in pagina ventrali prope basem seminis factum ornatis, foliolis plerumque paucioribus et inflorescentia staminata robustioribus distinguitur, et a speciebus australianis ceteris foliis pedatis differt. **Typus:** Queensland. NORTH KENNEDY DISTRICT: Gustav Creek, Nelly Bay, Magnetic Island, 19°09′S, 146°51′E, 15 March 1985, *B.R. Jackes* "closed forest, vine, flowers white" (holo: BRI; iso: A,CANB,K,L,MEL,NSW).

A robust vine; stems glabrous, lenticellate, rounded initially, becoming flattened with age; lenticels prominent. Tendrils bifid. Leaves pedate, with 5–7(–11) leaflets; leaflets firm, dark glossy green; both surfaces glabrous; margins irregularly toothed with 5 or 6 teeth on either side of the lamina; central leaflet elliptical, apex acuminate, base shortly attenuate, (12–)13(–18) cm × (4.3–)6(–8.5) cm; lateral leaflets elliptical, proportionally smaller, oblique at the base, particularly the lowest leaflets. Petiole rounded, (5.5–)6.6(–11) cm long; lenticels prominent even before leaf is fully expanded; central petiolule rounded, lenticels often obvious, (1–)2.7(–4.2) cm long; lateral petiolules (0.5–)1.8(–3.3) cm long. Stipules triangular, c. 2.5 mm × 2 mm. Inflorescence bracts inconspicuous; scattered papillae present on pedicels. Staminate inflorescence robust, 3–5 cm long; calyx spreading, c. 0.5 mm long, papillose; corolla whitish, c. 2 mm × 1.5 mm, cucullate at the apex, lobes strongly reflexed; filaments c. 1.5 mm long, anthers c. 0.5 mm long. Pistillate inflorescence 3.5–5.7 cm long; pedicels 3 mm long; calyx as for male flower; corolla 2.5 mm × 1.5 mm; aborted anthers triangular; ovary broadly conical, c. 1.5 mm long; stigma sessile, lobes spreading, ciliolate. Berry globular to ovoid, bluish black to black at maturity, 0.9–1.2 cm × 0.7–1 cm; seeds ovoid, c. 7 mm × 6 mm; 1 per fruit; furrows on the ventral surface converge at base of seed; endosperm in transverse section much dissected by the convoluted endotesta. **Fig. 4A–E, Fig. 5C–D.**

Representative specimens: Queensland. COOK DISTRICT: Tozer Gap, Jun 1983, Morton (JCT); Chester River, 13°40′S, 143°25′E, Jul 1977, *Hyland* 9455 (QRS); Wallaby Creek, S of Cooktown, Jun 1982, *Jackes* (BRI,CANB). NORTH KENNEDY DISTRICT: Murray Upper, 18°00′S, 145°00′E, Jun 1977, *Cooke* (DNA,QRS); Cardwell, Sep 1978, *A. & M. Thorsborne* (BRI). SOUTH KENNEDY DISTRICT: Airlie Beach, Nov 1982, *Jackes* (JCT).

Specimens from 14 localities examined.

Distribution and habitat: This species occurs (**Map 1**) along the eastern Queensland coastline from Tozer Gap in Cape York Peninsula as far south as Airlie Beach (20°16′S, 148°44′E) between sea level and 300 m, and is commonly found along streams in vine forest. Soils are variable.

Phenology: Flowers have been collected in autumn and fruits in winter and early spring.

Notes and observations: This species is easily distinguished by its firm, pedate leaves with leaflets with irregularly toothed margins, and numerous conspicuous lenticels on the petiole even before the lamina is fully expanded. The number of leaflets per leaf is variable even on the one plant, but the number most frequently encountered is 5–7. Fruits are reported to be eaten by the fig bird (J. Wieneke, pers. comm.). It is closely related to *T. pisicarpum* which occurs in Papua New Guinea; however, the latter has thinner usually smaller leaves, less prominent lenticels on the petioles, the staminate inflorescence is longer and on the specimens examined appears to be more fragile and easily broken when dry. The furrows on the ventral surface of the seed converge about midway along the seed rather than at its base.

Etymology: This species is named for Margaret and Arthur Thorsborne of Cardwell, who collected the first fertile material of it, in recognition of their contribution to biology in the Rockingham Bay area.

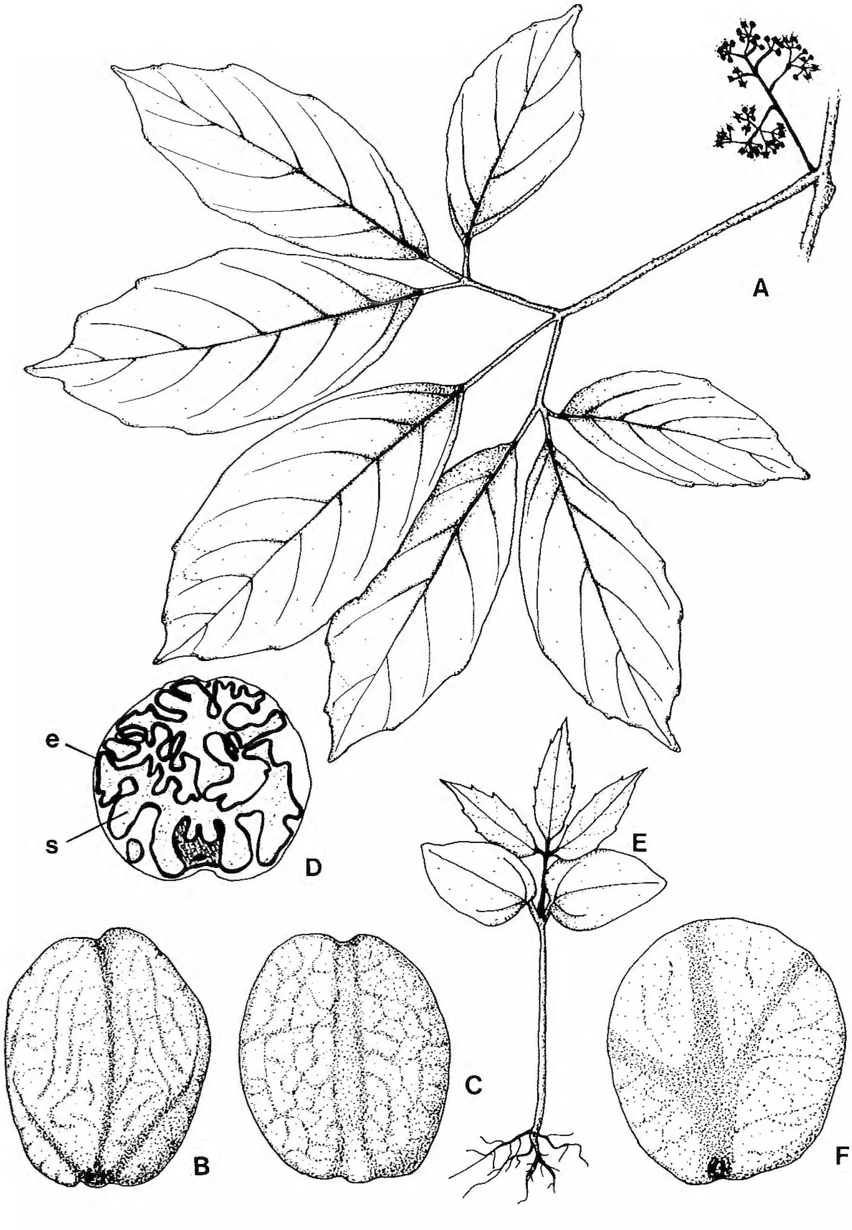

Fig. 4. *Tetrastigma thorsborneorum*: A. leaf with staminate inflorescence × 0.5. B. seed, ventral surface showing the position of the raphe and the lateral furrows × 5. C. seed, dorsal surface showing the position of the perichalaza × 5. D. median transverse section of mature seed × 5. E. seedling showing cotyledons and first leaf × 0.5. *Tetrastigma pisicarpum*: F. seed, ventral surface showing position of the raphe and the lateral furrows × 5. (e – lignified endotesta; s – endosperm)

5. Tetrastigma pisicarpum (Miq.) Planchon in A. & C. DC., Monogr. phan. 5: 441 (1887); *Vitis pisicarpa* Miq., Ann. mus. lugd.-bat. 1: 79 (1863). **Type:** New Guinea, *Zippelius* (iso: L).

A glabrous vine; stems rounded, lenticellate; bark flaky; lenticels dotted. Tendrils bifid. Leaves pedate, with (7–)9(–11) leaflets; leaflets thin, drying somewhat like parchment; central leaflet elliptical, apex shortly acute, base acute, 6–12 cm × 3–7 cm; lateral leaflets elliptical, proportionally smaller, oblique at the base. Petiole striate, 10–10.5 cm long; lenticels inconspicuous until lamina fully expanded; central petiolule 3–5 cm long; lateral petiolules 2.5–5 cm long. Staminate inflorescence with flattened branches exceeding 6 cm long; peduncles and pedicels thin and narrow, in the dry state appearing to be easily broken. Berry obovoid to elliptical, blackish at maturity, 0.8–0.9 × 0.6–0.7 cm; seeds ovoid, c. 5–6 mm × 6–7 mm; 1 per fruit; lateral furrows converge on the ventral surface with the central furrow at about the midpoint of the seed. **Fig. 4F.**

Specimens examined. Indonesia. 1869, *Zollinger* (K); *de Vogel* 5059 (K). **Papua New Guinea.** New Guinea, *Forbes* 1344 (K).

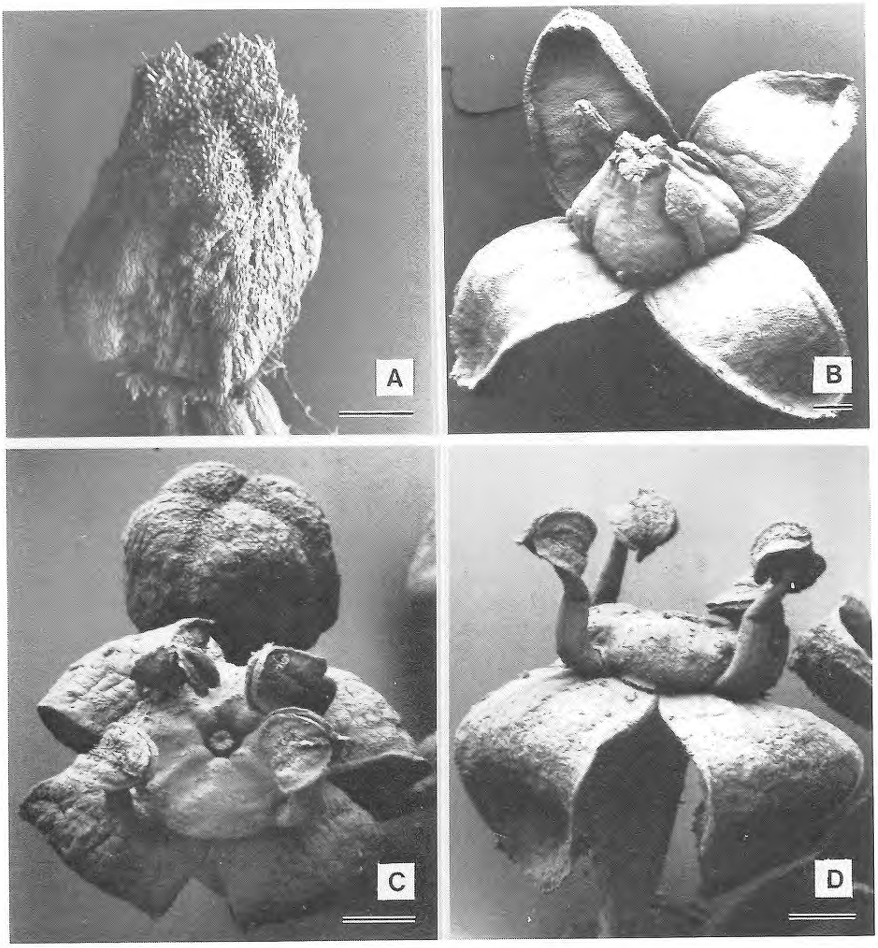

Fig. 5. *Tetrastigma petraeum*: A. unopened bud of female flower. B. open female flower. *Tetrastigma thorsborneorum*: C. open male flower and bud. D. side view of open male flower showing reduced ovary surrounded by the disc. All scale bars equal 0.5 mm.

Vegetative material and material with immature staminate inflorescences collected from the Lockerbie Scrub area at the top of Cape York Peninsula appears to belong to this species. Confirmation of this identification at this stage is not possible because no mature flowering or fruiting material has been seen. All specimens examined have usually had between 7 and 11 leaflets per leaf and the leaflets are thin so that even tertiary veins are easily seen on fresh material; lenticels are relatively inconspicuous on all but old petioles. The collection by *Gray* 4295 bears young staminate inflorescences. Although not fully mature, the buds are considerably smaller than buds of *T. thorsborneorum* which are somewhat younger, and the top of the ovary and stigma are projecting well above the disc.

[Bamaga Rd, 8 km S of Cape York, 10°45′S, 142°31′E, Feb 1986, *Gray* 4295 (JCT,QRS); Between Lockerbie and Somerset, 10°46′S, 142°30′E, May 1981, *Hyland* 21138V (JCT,QRS); Carnegie Range, Apr 1984, *Jackes* (JCT); Lockerbie Scrub, Jul 1986, *Jackes* (JCT); South of Bamaga, 27 km SW of Cape York, Oct 1965, *Smith* 12603 (BRI 131412)].

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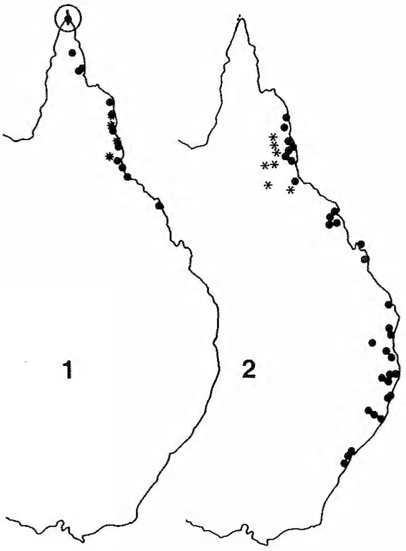

Maps 1–2. 1. ◆? *Tetrastigma pisicarpum*; ● *T. thorsborneorum*; ∗ *T. crenatum*. 2. ● *Tetrastigma nitens*; ∗ *T. petraeum*.